REMARKS

Claims 28-46 are pending.

Claims 28-46 are rejected.

Claims 44 and 46 are objected to.

Claims 28-46 are rejected under 35 U.S.C. 112, first paragraph.

Claims 28-34 and 36-46 are rejected under 35 U.S.C. 103(a).

Claim 35 is rejected under 35 U.S.C. 103(a).

No new matter is added.

Claim Objections

Claims 44 and 46 are objected to because of the following informalities: In claim 44, the phrase "the semiconductor chip" should read, "a semiconductor chip". In claim 46, the phrase "first and second circuit patterns" should read "first and second conductive circuit patterns".

Claim Rejections – 35 U.S.C. § 112

Claims 28-46 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.

Claim Rejections – 35 U.S.C. § 103

Claims 28-34 and 36-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,707,149 to Smith ("Smith").

Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Smith in view of U.S. Patent No. 6,064,111 to Sota et al. ("Sota").

In response to the office action, applicant has amended the claims to further clarify their scope. The claims as amended now describe the invention using, in part, terms that have well-known meanings in the industry to which this invention relates. While the claims as originally presented used similar terms, the amended claims use the terms "wire bond" and "printed circuit" to define some of the claim limitations. While each describes an electrical conductor, there are significant structural differences, which can be seen by examining the specification or by reviewing some of the numerous patents that relate to printed circuits and wire bonding.

Although applicant has amended the claims to more particularly point out the scope of the invention, the rejection of the claims as pending is nonetheless traversed.

First, while applicant does not dispute that chip bond pads are electrically connected to solder balls in semiconductor packages, there is no indication in Smith as to how this connection is made. As stated in the specification of the present application, making an electrical connection between a bond pad on a semiconductor device and a solder ball pad is one of the problems addressed by the invention.

Second, the Examiner has characterized the electrical connection between pads 36 in Smith as a "wire." Office Action, p. 4 (April 24, 2006). Smith, however, refers to the connections shown in Fig. 5B between pads 36 by a different name: "Some of the conductive pads may be interconnected with adjacent conductive pads by traces 37 extending over top surface 30. In other embodiments, the second substrate may have leads with first ends permanently secured to the second substrate and second ends releasably secured to the substrate." Smith, Col. 7, Lines 13 *et seq*. The term *traces* is a well-known reference to printed circuit connections. If there is doubt about this, the Examiner is again referred to prior art patents, specifically those that include the terms *printed circuit* and *trace.* The second quoted sentence presumably refers to leads like conductive lead 62 in Fig. 7, which "includes a first end 64 that is permanently secured to the dielectric film 56 and a second end 66 that is releasably secured to dielectric film 56." *Id.* at Col. 8, Lines 3-4. Neither of these kinds of connections is a wire or, as now specified in the amended claims, a wire bond.

Although applicant disputes that Smith discloses wire bonding between bond pads 36, even if it does, Smith is still not suitable as a 103 reference. Regardless of how the bond pads 36 in Fig. 5B are connected to one another, there is no indication in Smith concerning what the bond pads are connected to other than some being connected to contacts 42 on chip 38. Again, applicant has devised a structure that facilitates connection of bond pads on a chip to solder ball pads using electrical connections that are specified in the claims as a particular configuration of printed circuit patterns, printed circuit bond fingers, and wire bonds. This is not shown or suggested in Smith.

Even though applicant has traversed the rejection, the amended claims further distinguish the present invention from Smith. To help the Examiner understand the claim terms as amended, claim 28 as amended is reproduced below with exemplary structure in the specification identified with a numeral following the corresponding claim limitation:

28. A semiconductor package comprising:

a substrate (100) having a plurality of first printed circuit bond fingers (104) formed on the surface of the substrate;

a semiconductor chip 102 having a plurality of bond pads (110) formed thereon;

a plurality of first printed circuit solder ball pads (110) formed on the surface of the substrate;

a printed circuit pattern (106) formed on the surface of the substrate between each of a group of first printed circuit bond fingers (104) and a corresponding first solder ball pad (108);

a wire bond (112) formed between each of the group of first printed circuit bond fingers (104) and a corresponding bond pad (110) thereby electrically connecting each of the corresponding bond pads to a first solder ball pad;

a second printed circuit bond finger (208) formed on the surface of the substrate;

a second printed circuit solder ball pad (206) formed on the surface of the substrate;

a printed circuit pattern formed on the surface of the substrate between the second printed circuit bond finger (208) and the second printed circuit solder ball pad (206);

a third printed circuit bond finger (204) formed on the surface of the substrate;

a wire bond (202-204) having one end affixed to the third bond finger (204) and the other end affixed to one of the bond pads; and

a wire bond (114) having one end affixed to the second bond finger (208) and the other end affixed to the third bond finger (204) thereby electrically connecting said one bond pad to said second printed circuit solder ball pad.

The claim as amended describes a first type of connection between a solder ball pad and a chip bond pad in the following order: printed circuit solder ball pad—printed circuit pattern—printed circuit bond finger—wire bond—chip bond pad. It also includes a second type of

connection in this order: printed circuit solder ball pad—printed circuit pattern—(second) printed circuit bond finger—wire bond—(third) printed circuit bond finger—wire bond—chip bond pad. Smith does not disclose either of these types of connections much less both existing in a single package.

This provides significant advantages, as described in the specification, when the chip is redesigned in a manner that adds bond pads to the chip. Applicant's approach permits utilization of the existing package in more situations than permitted by prior art packages. In other words, it was more often necessary to redesign the prior art package when bond pads were added to the chip.

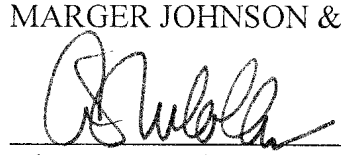
As discussed above, Smith does not disclose a wire bond between bond fingers. Nor does it disclose any kind of electrical connection between bond fingers that forms a part of an electrical connection between a solder ball pad and a chip bond pad. Reconsideration is requested in view of the above amendments and accompanying argument.

Concerning claim 43 and its dependant claims, nothing in Smith suggests a wire bond connecting circuit patterns. Reconsideration of these claims is also requested.

Conclusion

For the foregoing reasons, reconsideration and allowance of the pending claims as amended is requested. The Examiner is encouraged to telephone the undersigned at (503) 222-3613 if it appears that an interview would be helpful in advancing the case.

Respectfully submitted,
MARGER JOHNSON & McCOLLOM, P.C.



Alan T. McCollom, Reg. No. 28,881

MARGER JOHNSON & McCOLLOM, P.C.
210 SW Morrison Street, Suite 400
Portland, OR 97204
503-222-3613

Customer No. 20575